AQA A Level PE – The Cardiovascular System Practice Test (Sample)

Study Guide

BY EXAMZIFY

Everything you need from our exam experts!

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- **Practice answering questions under realistic conditions,**
- **Improve accuracy and speed,**
- **Review explanations to strengthen weak areas, and**
- **Approach the exam with greater confidence.**

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here’s how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don’t just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There’s no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

1. **During heat stress in exercise, which of the following best describes the cardiovascular response?**

   A. **Increased skin blood flow for cooling; higher heart rate and cardiac output; venous return may be reduced by plasma volume loss.**

   B. **Decreased skin blood flow with reduced heart rate and cardiac output.**

   C. **No change in skin blood flow or heart rate during heat stress.**

   D. **Increased skin blood flow but decreased cardiac output due to fluid shifts.**

2. **The thickening of the heart muscle that increases its size and strength is called what?**

   A. **Bradycardia**

   B. **Atherosclerosis**

   C. **Cardiac Hypertrophy**

   D. **Atheroma**

3. **Which condition leads to extra strain on arteries and heart, increasing risk of heart attack, heart failure, kidney disease, stroke or dementia?**

   A. **Diabetes**

   B. **High cholesterol**

   C. **High blood pressure**

   D. **Dehydration**

4. **Endurance training increases plasma volume. How does this affect hematocrit and blood viscosity?**

   A. **Increases hematocrit and increases viscosity.**

   B. **Increases plasma volume, reducing hematocrit and viscosity.**

   C. **Decreases plasma volume and increases viscosity.**

   D. **Has no effect on hematocrit or viscosity.**

5. **Pocket valves are valves located in veins that prevent backflow. Which statement best describes their function?**

   A. **They regulate arterial flow**

   B. **They transport nutrients**

   C. **They prevent backflow of blood in the veins**

   D. **They assist with blood clotting**

6. What term is used for a resting heart rate below 60 bpm?

A. Tachycardia

B. Bradycardia

C. Normal sinus rhythm

D. Atheroma

7. The phrase 'In through Atria and OUT through Ventricles' describes what?

A. Cardiac Conduction System

B. Systole

C. Neural Control Mechanism

D. Movement of blood

8. Which muscle is involuntary and found in the walls of blood vessels?

A. Skeletal muscle

B. Cardiac muscle

C. Smooth muscle

D. Connective tissue

9. The liquid component of blood that primarily transports nutrients, hormones, and wastes is known as what?

A. Plasma

B. Platelets

C. Red Blood Cells

D. White Blood Cells

10. Which statement about oxygen diffusion during gas exchange is true?

A. Oxygen diffuses across the alveolar–capillary membrane into the blood.

B. Oxygen diffuses from the atmosphere directly into red blood cells in the bloodstream.

C. Oxygen diffusion occurs only in large airways.

D. Oxygen diffusion occurs exclusively in systemic capillaries.

Answers

1. A
2. C
3. C
4. B
5. C
6. B
7. D
8. C
9. A
10. A

Explanations

1. During heat stress in exercise, which of the following best describes the cardiovascular response?

A. Increased skin blood flow for cooling; higher heart rate and cardiac output; venous return may be reduced by plasma volume loss.

B. Decreased skin blood flow with reduced heart rate and cardiac output.

C. No change in skin blood flow or heart rate during heat stress.

D. Increased skin blood flow but decreased cardiac output due to fluid shifts.

When the body heats up during exercise, it boosts cooling by dilating the skin vessels, so more blood flows to the skin to lose heat. That increased skin blood flow is a hallmark of heat stress. To keep delivering blood to working muscles and maintain blood pressure despite the heat, heart rate rises and cardiac output increases. At the same time, sweating reduces plasma volume, which can lower venous return to the heart and limit filling of the heart between beats. The result is a scenario where skin blood flow is up for cooling, heart rate and cardiac output are up to meet demands, and venous return may be reduced by fluid loss. This combination best fits the described response.

2. The thickening of the heart muscle that increases its size and strength is called what?

A. Bradycardia

B. Atherosclerosis

C. Cardiac Hypertrophy

D. Atheroma

When the heart has to work harder over time, its muscle can thicken and become stronger. This enlargement of the heart muscle is called cardiac hypertrophy. It happens because the heart cells grow larger to generate more force, so the walls become thicker. This can be a normal adaptation in athletes (physiological hypertrophy), or a response to disease conditions like high blood pressure or valve problems (pathological hypertrophy), which can affect how the heart fills and relaxes if it becomes excessive. Bradycardia means a slow heart rate, not a structural change in the heart muscle. Atherosclerosis and atheroma describe buildup of plaques in arteries, not thickening of the heart muscle itself.

3. Which condition leads to extra strain on arteries and heart, increasing risk of heart attack, heart failure, kidney disease, stroke or dementia?

A. Diabetes

B. High cholesterol

C. High blood pressure

D. Dehydration

High blood pressure raises the pressure the heart must generate to push blood and the force exerted on arterial walls. That extra workload stretches and thickens the heart muscle and damages arteries, promoting wear-and-tear on the cardiovascular system. Over time, this leads to left ventricular hypertrophy and reduced arterial compliance, plus vascular injury that can cause blockages or bleeds. The combination raises the risk of heart attack and heart failure, as well as kidney disease, stroke, and even cognitive decline such as vascular dementia due to chronic damage to small vessels. While conditions like diabetes or high cholesterol also increase cardiovascular risk, the scenario described is most closely linked to the systemic strain caused by high blood pressure. Dehydration can cause temporary changes but does not produce the sustained vascular strain associated with these broad outcomes.

4. Endurance training increases plasma volume. How does this affect hematocrit and blood viscosity?

A. Increases hematocrit and increases viscosity.

B. Increases plasma volume, reducing hematocrit and viscosity.

C. Decreases plasma volume and increases viscosity.

D. Has no effect on hematocrit or viscosity.

When plasma volume expands, the total volume of blood increases but the number of red blood cells doesn't rise immediately. Hematocrit is the proportion of blood that is red blood cells, so if you dilute the blood with more plasma, hematocrit falls. Viscosity, or thickness of the blood, largely depends on how concentrated the red blood cells are; with fewer cells per unit volume, the blood becomes less viscous. So endurance training can dilute the blood by increasing plasma volume, which lowers both hematocrit and viscosity. The other possibilities don't fit because increasing plasma volume without a rise in red cells wouldn't raise hematocrit or viscosity, and decreasing plasma volume would actually raise viscosity.

5. Pocket valves are valves located in veins that prevent backflow. Which statement best describes their function?

A. They regulate arterial flow

B. They transport nutrients

C. They prevent backflow of blood in the veins

D. They assist with blood clotting

Valves in veins are all about keeping blood moving in the right direction to aid return to the heart. Pocket valves are one-way flaps formed by folds of the inner lining. They open to let blood flow toward the heart and snap shut if blood tries to move backward, preventing backflow. This is especially important in the legs, where blood must work against gravity, aided by muscle contractions that squeeze the veins to push blood upward. So the function described is that these valves prevent backflow of blood in the veins. They don't regulate arterial flow, transport nutrients, or directly affect clotting.

6. What term is used for a resting heart rate below 60 bpm?

A. Tachycardia

B. Bradycardia

C. Normal sinus rhythm

D. Atheroma

Resting heart rate below 60 bpm is bradycardia. It describes a slower-than-normal heart rate when at rest. Tachycardia would be a rate above about 100 bpm, not below. Normal sinus rhythm refers to a normal, regular rhythm typically around 60–100 bpm at rest, not under 60. Atheroma is plaque in the arteries and isn't about heart rate. So, the term for a resting heart rate below 60 is bradycardia.

7. The phrase 'In through Atria and OUT through Ventricles' describes what?

A. Cardiac Conduction System

B. Systole

C. Neural Control Mechanism

D. Movement of blood

The key idea here is the movement of blood through the heart. The phrase describes the flow: blood enters the heart into the atria, then moves into the ventricles, and is pumped out from the ventricles to the lungs and body. It's about the direction and act of blood moving through the heart, not about the electrical signals that coordinate heartbeat (cardiac conduction), the contraction phase itself (systole), or neural control of heart rate. So this best captures the concept of how blood moves through the heart as part of circulation.

8. Which muscle is involuntary and found in the walls of blood vessels?

A. Skeletal muscle

B. Cardiac muscle

C. Smooth muscle

D. Connective tissue

Smooth muscle is the type that works automatically and is found in the walls of blood vessels. It's controlled by the autonomic nervous system, so you can't consciously move it. Its main role is to adjust the diameter of vessels, causing vasoconstriction or vasodilation to regulate blood flow and blood pressure. Unlike skeletal muscle, smooth muscle fibers are non-striated and spindle-shaped, arranged in layered walls of vessels. Cardiac muscle is also involuntary but located in the heart, not in the vessel walls, while skeletal muscle is voluntary and attached to bones.

9. The liquid component of blood that primarily transports nutrients, hormones, and wastes is known as what?

A. Plasma

B. Platelets

C. Red Blood Cells

D. White Blood Cells

The liquid component of blood that serves as the transport medium for nutrients, hormones, and waste products is plasma. Plasma is mostly water and carries dissolved substances such as glucose, amino acids, vitamins, minerals, gases, electrolytes, and important proteins like albumin, globulins, and fibrinogen. It is the non-cellular part, surrounding the cells. The solid components—red blood cells, white blood cells, and platelets—handle other roles: red blood cells transport oxygen and carbon dioxide, white blood cells fight infection, and platelets aid in clotting. Because the question asks for the part that primarily transports nutrients, hormones, and wastes, plasma is the correct choice.

10. Which statement about oxygen diffusion during gas exchange is true?

A. Oxygen diffuses across the alveolar–capillary membrane into the blood.

B. Oxygen diffuses from the atmosphere directly into red blood cells in the bloodstream.

C. Oxygen diffusion occurs only in large airways.

D. Oxygen diffusion occurs exclusively in systemic capillaries.

Oxygen diffusion during gas exchange is driven by diffusion across the thin alveolar–capillary membrane, from the air inside the alveoli into the blood in the pulmonary capillaries. The alveolar air has a high partial pressure of oxygen, while the blood entering the pulmonary capillaries has a lower partial pressure. Because the barrier between air and blood is extremely thin and presents a large surface area, oxygen readily moves down its partial pressure gradient into the blood. Once in the blood, oxygen binds to haemoglobin in red blood cells for transport to tissues. This is why the statement about oxygen crossing the alveolar–capillary membrane into the blood is correct. Oxygen does not diffuse directly into red blood cells from the atmosphere, and gas exchange mainly occurs in the alveoli, not in large airways, nor exclusively in systemic capillaries.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://aqaalevelpecardiovascularsys.examzify.com

We wish you the very best on your exam journey. You've got this!